



July 7, 2016

Fair Rates for Wisconsin's Dairyland, Inc.
PO Box 1858
Madison, WI 53701-1858

Ms. Sandy Paske, Commission Secretary
Wisconsin Public Service Commission
610 N. Whitney Way
Madison, Wisconsin 53705-2729

RE: Comments to the Strategic Energy Assessment (5-ES-108)

Dear Ms. Paske:

Fair Rates for Wisconsin's Dairyland (FRWD) welcomes this opportunity to comment on the Strategic Energy Assessment (5 ES 108). We wish with to submit three items for consideration by the Commission and interested stakeholders.

Data on the growth shows significant growth in both solar capacity and solar installations in Wisconsin.

In docket 5 ES 108, the Commission has requested data from Wisconsin energy providers on Distributed Energy Resources (DER). This is the first time this data has been requested.

Much of this data is found in "Tab 13" of the PSCW data request.

We believe the final solar capacity and installation numbers are reflected in attached FRWD – Table 1.

The results show that solar DER in Wisconsin has grown by over 1100% in eight short years.

SEA TAB 13 does not include a significant amount of solar capacity that came online after the September 2015 cut-off date.

In its DER tab 13 data request for the SEA, the commission asked energy providers to submit date through September of 2015. Largely due to construction schedules, many large solar projects were put into service after September 31.

Please see attached FRWD Table 2, in which FRWD notes the projects added in 2015 but *after* the September 31, 2015 cutoff date. This is not an exhaustive list and has been compiled from public, government, and social media sources. FRWD offers these additions because they alone, without consideration of other unknown additions, represent between 3.5 and 4 Megawatts of solar in just the

last three months of last year. This is significant given that the TOTAL amount of solar DEG reported in the draft Strategic Energy Assessment is just near 21 Megawatts.

The Manke Rule prevails here. FRWD is not suggesting official collection of further data post cut-off as part of this docket. We do want the commission to take note because the total amount of solar in the last three months of the year appears to be larger than the solar placed in-service in the first nine months.

The commission should include in the SEA, new information on the solar subsidies in Wisconsin over the same period of time it collected data on solar deployment.

We believe inclusion of this information will add focus to the emerging picture of solar energy in Wisconsin. While this information may be hard to come by, we suggest the totals from the USDA LEAP program is a good place to start. We recommend using yearly aggregated totals from this 2003 – 2015 project list.

http://www.rd.usda.gov/files/WI_REAPrecipients.pdf

PSCW Staff may have further ideas on where to source this information.

FRWD thanks the Commission for their consideration on this topic.

Regards



Mark Meyer
Executive Director
Fair Rates for Wisconsin's Dairyland, Inc.

Strategic Energy Assessment 2022 (5 ES 108) Solar Installations and Capacity 2008 - September 2015 (FRWD - Table 1)

| Total Installations | | | | | | | | | | | | | | | Total Installed Capacity (kw) | | | | | | | | | | | | | | |
|---------------------|-------------------|---|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|---|-------------------------------|------|------|------|------|------|------|--|--|--|--|--|--|--|--|
| ERF Date | Utility | 2008 2009 2010 2011 2012 2013 2014 2015 | | | | | | | | | | | | 2008 2009 2010 2011 2012 2013 2014 2015 | | | | | | | | | | | | | | | |
| 3-May | Black River Falls | 0 | 2 | 3 | 6 | 8 | 9 | 11 | 11 | | | | | 0 | 8 | 17 | 38 | 54 | 71 | 85 | 85 | | | | | | | | |
| 3-May | Mt Horeb | 0 | 2 | 3 | 6 | 8 | 9 | 11 | 11 | | | | | 0 | 8 | 17 | 38 | 54 | 71 | 85 | 85 | | | | | | | | |
| 3-May | Lodi | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 9 | | | | | | | | |
| 26-Apr | NSPW | 25 | 37 | 51 | 74 | 89 | 107 | 147 | 178 | | | | | 207 | 270 | 334 | 494 | 656 | 713 | 930 | 1282 | | | | | | | | |
| 20-Apr | Dahberg | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | | | | | 0 | 0 | 6 | 11 | 11 | 11 | 29 | 39 | | | | | | | | |
| 20-Apr | Marshfield | 1 | 3 | 10 | 10 | 10 | 11 | 12 | 12 | | | | | 2 | 6 | 28 | 28 | 28 | 47 | 69 | 69 | | | | | | | | |
| 20-Apr | Mazomanie | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | | | | | 0 | 0 | 0 | 13 | 13 | 13 | 21 | 21 | | | | | | | | |
| 20-Apr | Wisconsin Rapids | 0 | 2 | 2 | 4 | 5 | 7 | 8 | 12 | | | | | 0 | 10 | 10 | 20 | 30 | 50 | 53 | 69 | | | | | | | | |
| | NW WI Power Co & | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19-Apr | North Central | 2 | 4 | 4 | 5 | 6 | 7 | 16 | 20 | | | | | 7 | 12 | 12 | 17 | 19 | 35 | 101 | 122 | | | | | | | | |
| 15-Feb | WPSC | 7 | 112 | 163 | 195 | 231 | 244 | 272 | 316 | | | | | 69 | 856 | 1115 | 1400 | 1609 | 1720 | 1896 | 2270 | | | | | | | | |
| 21-Jan | WEPCO | 134 | 193 | 268 | 393 | 461 | 574 | 682 | 735 | | | | | 912 | 1275 | 2502 | 3826 | 4337 | 5452 | 6053 | 6341 | | | | | | | | |
| 18-Jan | Kiel | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | | | | | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | | | | | | | | |
| 7-Jan | Fennimore | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | | | | | 0 | 0 | 0 | 11 | 11 | 11 | 21 | 21 | | | | | | | | |
| 6-Jan | Shullsburg | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | | | | | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 22 | | | | | | | | |
| 14-Dec | Clintonville | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 0 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | | | | | | | | |
| 9-Dec | WPL | 63 | 154 | 230 | 282 | 344 | 380 | 455 | 509 | | | | | 204 | 791 | 1497 | 2073 | 2500 | 2774 | 5788 | 6571 | | | | | | | | |
| 24-Nov | Elkhorn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | | | | | | | | |
| 17-Nov | La Farge | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 1 | | | | | 0 | 9 | 0 | 4 | 13 | 13 | 13 | 13 | | | | | | | | |
| 16-Nov | Cumberland | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 | | | | | | | | |
| 13-Nov | MGE | 89 | 129 | 162 | 229 | 276 | 309 | 359 | 380 | | | | | 324 | 621 | 888 | 1383 | 1774 | 2117 | 2652 | 2902 | | | | | | | | |
| 12-Nov | Bloomer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | | | | | | | | |
| 2-Nov | MPU | 0 | 1 | 2 | 2 | 2 | 4 | 5 | 5 | | | | | 0 | 4 | 229 | 229 | 295 | 299 | 303 | 303 | | | | | | | | |
| 2-Nov | SWLP | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | | | | | 0 | 0 | 6 | 6 | 6 | 6 | 6 | 10 | | | | | | | | |
| 30-Oct | Whitehall | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 12 | | | | | | | | |
| 30-Oct | Two Rivers | 0 | 0 | 0 | 1 | 2 | 4 | 4 | 4 | | | | | 0 | 0 | 0 | 11 | 16 | 25 | 25 | 25 | | | | | | | | |
| 30-Oct | Waterloo | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | | | | | 0 | 0 | 0 | 3 | 3 | 3 | 9 | 9 | | | | | | | | |
| 30-Oct | Waunakee | 1 | 1 | 1 | 1 | 1 | 3 | 6 | 6 | | | | | 5 | 5 | 5 | 5 | 5 | 17 | 36 | 36 | | | | | | | | |
| 30-Oct | Waupun | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | |
| 30-Oct | Westby | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | |
|--------|-----------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| 30-Oct | River Falls | 1 | 4 | 5 | 5 | 5 | 5 | 16 | 20 | 21 | 21 | 3 | 14 | 18 | 18 | 18 | 79 | 102 | 120 |
| 30-Oct | Slinger | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 30-Oct | Stoughton | 1 | 4 | 5 | 6 | 7 | 10 | 13 | 13 | 13 | 13 | 7 | 20 | 26 | 35 | 41 | 58 | 70 | 70 |
| 30-Oct | Sturgeon Bay | 4 | 4 | 8 | 9 | 11 | 14 | 15 | 17 | 17 | 17 | 13 | 13 | 25 | 35 | 40 | 53 | 62 | 74 |
| 30-Oct | Sun Prairie | 1 | 3 | 4 | 4 | 6 | 7 | 8 | 8 | 8 | 8 | 6 | 59 | 65 | 65 | 72 | 78 | 82 | 82 |
| 30-Oct | Plymouth | 0 | 2 | 3 | 5 | 6 | 6 | 10 | 10 | 12 | 12 | 0 | 9 | 14 | 26 | 31 | 31 | 74 | 113 |
| 30-Oct | Prairie du Sac | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 10 | 10 | 10 | 10 | 10 | 10 |
| 30-Oct | Reedsburg | 0 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 4 | 10 | 13 | 13 | 13 | 13 | 13 |
| 30-Oct | Richland Center | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 30-Oct | New Glarus | 1 | 1 | 3 | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 3 | 3 | 16 | 21 | 28 | 28 | 28 | 28 |
| 30-Oct | New Holstein | 1 | 1 | 1 | 2 | 3 | 3 | 4 | 5 | 5 | 5 | 3 | 3 | 3 | 8 | 13 | 13 | 18 | 30 |
| 30-Oct | New Richmond | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 4 | 4 | 12 | 12 |
| 30-Oct | Oconomowoc | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 9 | 9 | 13 | 13 | 13 | 13 | 13 |
| 30-Oct | Lake Mills | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 4 | 4 | 4 | 10 | 10 | 10 | 10 | 13 | 16 | 16 | 22 |
| 30-Oct | Menasha | 1 | 1 | 4 | 5 | 6 | 7 | 7 | 7 | 7 | 7 | 1 | 1 | 27 | 32 | 37 | 43 | 43 | 43 |
| 30-Oct | Muscoda | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 30-Oct | Hartford | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 30-Oct | Jefferson | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| 30-Oct | Juneau | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 30-Oct | Kaukauna | 2 | 4 | 9 | 10 | 12 | 14 | 17 | 17 | 17 | 17 | 11 | 19 | 40 | 43 | 54 | 66 | 84 | 84 |
| 30-Oct | Columbus | 0 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 1 | 2 | 8 | 8 | 8 | 8 | 8 |
| 30-Oct | Cuba City | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 30-Oct | Eagle River | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 30-Oct | Evansville | 1 | 1 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 3 | 3 | 25 | 25 | 25 | 35 | 35 | 35 |
| 30-Oct | Algoma | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 9 | 9 | 9 | 9 | 9 |
| 30-Oct | Boscobel | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 12 | 12 | 12 | 12 |
| 30-Oct | Broadhead | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 30-Oct | Cedarburg | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 8 | 8 | 8 | 8 | 8 | 8 |
| 27-Oct | Bangor | 0 | 0 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 0 | 0 | 9 | 9 | 9 | 9 | 16 | 32 |
| 1-Oct | Sheboygan Falls | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 5 | 8 | 8 | 8 | 8 | 8 |
| 8-Sep | Trempealeau | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 |
| n/a | Cooperatives | 14 | 61 | 103 | 153 | 187 | 233 | 348 | 348 | 348 | 348 | 55 | 250 | 496 | 858 | 1114 | 1461 | 2111 | 2111 |
| | TOTALS | 360 | 745 | 1076 | 1454 | 1738 | 2036 | 2497 | 2719 | 2719 | 2719 | 1890 | 4391 | 7583 | 10964 | 13115 | 15619 | 21133 | 23378 |

Wisconsin Solar Projects placed in service after SEA data request FRWD – Table 2

| Project | Size (kw) | Approx. In-Service Date | Media, government, and social media information on when solar project was placed in service |
|---------------------------|-----------|--|---|
| WE | | | |
| Letterhead Press | 337 | September 24, 2015 (Unsure if this is included in SEA data) | http://www.jsonline.com/business/new-berlin-letterhead-press-taps-large-solar-project-to-cut-power-bill-b99652024z1-365434621.html https://www.sunpeakpower.com/letterhead-press-manufacturing |
| Rockwell Automation | 263 | "likely will be completed before the end of the year." (2015) | http://www.bizjournals.com/milwaukee/news/2015/08/28/rockwell-automationinstalls-solar-array-at-mequon.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+bizi_milwaukee+%28Milwaukee+Business+Journal%29 |
| O&H Danish Bakery | 152 | (should be operating by October) 2015 | http://journaltimes.com/news/local/all-baking-moving-to-o-h-danish-bakery-s-new/article_b27ad0c0-900c-5c16-827f-cae6b0dc2c00.html |
| Jewelers Mutual Insurance | 128.5 | Fall 2015 | http://www.postcrescent.com/story/money/2016/02/13/whats-news-feb-779398738/ |
| Components Company | 78 | October 12 2015 | https://compcoinc.com/components-company-green-solar-panels/ |
| Outpost National Foods | 56 | December 11 2015 | https://www.outpost.coop/about/sustainability/ |
| Evergreen Credit Union | 56 | November 2015 | https://www.evergreencu.com/resources/solar-array |

Wisconsin Solar Projects placed in service after SEA data request FRWD – Table 2

| | | | |
|-------------------------------------|-----|---------------|--|
| | | | |
| WPSC | | | |
| Corrim Company | 92 | November 2015 | https://www.facebook.com/GreaterOshkosh/videos/1344643672227875/ |
| Forest County Potawatomi (Phase II) | 238 | November 2015 | http://energy.gov/indianenergy/forest-county-potawatomi-community-2014-project http://energy.gov/sites/prod/files/2016/04/f30/Forest-County-finalreport.pdf |
| | | | <div> <div>Rising Sun Daycare, Crandon, WI (24.8 kW);</div> <div>24.8</div> </div> <div> <div>• Gte-Ga-Nes Pre School, Crandon, WI (24.8 kW);</div> <div>24.8</div> </div> <div> <div>• Air Monitoring Station, Crandon, WI (12.5 kW);</div> <div>12.5</div> </div> <div> <div>• AODA, Crandon, WI (12.4 kW);</div> <div>12.4</div> </div> <div> <div>• Museum, Crandon, WI (49.6 kW);</div> <div>49.6</div> </div> <div> <div>• Ordinance, Crandon, WI (9kW);</div> <div>9</div> </div> <div> <div>• Stone Lake C-Store, Crandon, WI (80.6 kW); and,</div> <div>80.6</div> </div> <div> <div>• Property Management, Crandon, WI (24 kW).</div> <div>24</div> </div> <div> <div>237.7</div> </div> |
| | | | |
| MGE | | | |
| Central States | 741 | January 2016 | https://www.sunpeakpower.com/central-storage-warehouse |

Wisconsin Solar Projects placed in service after SEA data request FRWD – Table 2

| | | | |
|----------------------------|-----|--------------------------------|--|
| Warehouse | | | |
| Isthmus Engineering | 100 | Posted December 7, 2015 | http://www.isthmuseng.com/news/expanding-our-commitment-to-clean-energy/ |
| | | | |
| WPL | | | |
| Sisters of St Agnes | 247 | October 2015 | http://www.fdlreporter.com/story/news/local/action-advertiser/2015/10/31/sisters-st-agnes-install-solar-panels/74792574/ |
| Darlington School District | 156 | January 2016 | http://www.darlington.k12.wi.us/district/solarproject.cfm |
| Central Waters Brewery | 101 | Unknown | https://www.facebook.com/CWBrewing/photos/a.174752719219312.44338.115991068428811/839794312715146/?type=3&theater http://www.northwindre.com/page/renewable-energy-systems |
| Blenker Building Systems | 101 | Winter/Spring 2016? unknown | https://www.facebook.com/BlenkerBuilds/photos/a.378311109683.158075.303917919683/10154092269254684/?type=3&theater |
| Animart | 99 | Unknown Fall 2015? | https://www.facebook.com/166737733343548/photos/a.1042875305729782.1073741827.166737733343548/1218968604787117/?type=3&theater |
| Oregon Middle School | 62 | Oct 2015 | http://egaug22339.egaug.es/ |
| | | | |

Wisconsin Solar Projects placed in service after SEA data request FRWD – Table 2

| | | | |
|--|-----|---------------------|---|
| NSPW | | | |
| Crystal Ball Farms | 151 | Late September 2015 | http://www.presspubs.com/osceola/news/article_b567fc82-6c3d-11e5-9105-c32a5e70014f.html |
| Borah Teamwear | 50 | Fall 2015 | http://www.bicycleretailer.com/north-america/2015/12/11/borah-teamwear-invests-solar-energy#.Vw7cEaQrlb0 |
| Viebrock Construction | 10 | September 2015 | http://www.presspubs.com/osceola/news/article_b567fc82-6c3d-11e5-9105-c32a5e70014f.html |
| | | | |
| Municipal Utilities | | | |
| Cashton - Organic Valley | 95 | November 2015 | https://www.facebook.com/fullspectrum solar/photos/pcb.1169844449711710/1169841793045309/?type=3&theater |
| | | | |
| Cooperatives | | | |
| Polk-Burnett Electric Cooperative/ Common Harvest Farm | 7.5 | May 27, 2016 | http://commonharvestfarm.com/uploads/pdf/2016commonharvestnewsletter.pdf |
| | | | |
| MISC | | | |

Wisconsin Solar Projects placed in service after SEA data request FRWD – Table 2

| | | | |
|--------------------------|-----|---------------|--|
| Fair Share Coalition | 197 | Unknown | http://www.csacoalition.org/news/fairshare-solar-energy-group-buy/ |
| City of Milwaukee MREA | 84 | Unknown | https://www.midwestrenew.org/milwaukee |
| Union Cab Madison (MGE?) | 19 | December 2015 | https://www.facebook.com/UnionCab/posts/10153452382927535 http://legacysolarcoop.org/union-cab-of-madison-teams-up-with-legacy-solar-co-op/ |

Not included are community solar projects in River Falls, Eau Claire Coop, New Richmond, Clark Co Coop, Taylor Elec Coop